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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,035	11/21/2003	Francis Yu-Hei Tsang	2408.001US1	2542
21186 7590 07/31/2007 SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER PALABRICA, RICARDO J	
			ART UNIT 3663	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/720,035

Applicant(s)

TSANG ET AL.

Examiner

Rick Palabrica

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) 1-22, 26 and 30-78 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-25, 27-29, and 79 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. Applicant's 6/22/07 Amendment, which directly amended claim 23, added new claim 79, and traversed the rejection of claims in the previous examiner's 4/6/07 Office action, is acknowledged.

Applicant's arguments with respect to the rejected claims have been considered by the current examiner but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the plurality of nonconductive spacers (e.g., see claims 27 and 70) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 23-25, 28, and 29 are rejected under 35 U.S.C. 102(a) as being anticipated by Aramaki et al. (U.S. 7,193,237), who disclose an organic semiconductor diode device (e.g., see Abstract).

As to claim 23, Aramaki et al. disclose the diode device with a semiconductor layer 13 of porphyrin compound that is sandwiched between two electrodes (see Fig. 3E and col. 32, lines 32+). Aramaki et al. also disclose that the compound can be an organic semiconductor in a liquid crystal state (see col. 13, lines 65+). They also disclose that at least one of the two electrodes forms an energy barrier against the semiconductor material. This means that one electrode forms an energy barrier and the other electrode does not have to form a barrier.

As to the limitation, "wherein said liquid semiconductor contains radioactive isotope in solution", Aramaki et al.'s liquid organic compound inherently includes carbon that contains a naturally-occurring radioisotope, i.e., carbon-14.

As to the Schottky contact, this limitation reads on one of Aramaki et al.'s electrodes forming an energy barrier.

As to the low resistance contact, applicant has not specified or defined the term, "low resistance contact". Absent such definition, the examiner interprets term the term broadly and reads on the resistance contact formed by the other electrode in Aramaki et al., i.e., the one that does not have to form an energy barrier.

As to the electrical circuit and electrical load in claims 24 and 25, these are inherently formed when the diode device of Aramaki et al. is used in a rectifier circuit with a load.

As to applicant's claimed nuclear voltaic cell, the structure and method of operation of Aramaki et al. is the same as that recited in the claims, and Aramaki et al. must inherently function in the same manner to produce the same results as applicant's situation. As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 USPQ 563, In re Swinehart, 169 USPQ 226, In re Fitzgerald, 205 USPQ 594, In re Best et al., 195 USPQ 430, and In re Brown, 173 USPQ 685, 688.

As to claim 25, Aramaki et al. disclose a p-type semiconductor for their diode device (see col. 32, lines 48+).

As to claim 29, applicant's claim language, "mandrel", reads on the enclosure that is inherently present in Aramaki et al. in order to maintain a required volume of the liquid organic semiconductor.

As to claim 28, the limitation, "liquid semiconductor flows through said channel" is a process limitation that occurs when the claimed apparatus is exercised or made operational. This clause, as well as other statements of intended use, does not serve to patently distinguish the claimed structure over that of the reference, as long as the structure of the cited references is capable of performing the intended use. See MPEP 2111-2115.

See also MPEP 2114 that states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531.

[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

The cited reference is capable of being used in the same manner and for the intended or desired use as the claimed invention. For example, during the assembly of the device of Aramaki et al., the liquid organic semiconductor has to be filled in the container. The liquid semiconductor flows through the channel between the electrodes

until the container is filled. Note that it is sufficient to show that said capability exists, which is the case for the cited reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 27 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aramaki et al. The use of nonconductive spacers between the first and second metal contact layers is a matter of design choice or optimization within prior art conditions or through routine experimentation (see MPEP 2144.05 II.A). Having such spacers would provide structural rigidity to the enclosure for the liquid semiconductor of Aramaki et al. but would add to the cost of the device, and a proper balance between the competing factors have to be made.

4. Claims 23-25, 28, and 29 are rejected under 35 U.S.C. 103(a) as being obvious over Aramaki et al.

In section 2 above, the examiner stated that the electrode of Aramaki et al. that does not form an energy barrier reads on the low resistance contact. If applicant is of a different opinion, the claims are still unpatentable over said applied art.

Aramaki et al. teach that their device is a two terminal diode (see col. 32, lines 32+). Where this diode is applied in a rectifier circuit, in order for the circuit to work properly one electrode must be Schottky contact and the other electrode must be a low resistance contact(i.e., ohmic contact). The ohmic contact is required in order to get the signal current into and out of the semiconductor diode.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RJP
July 24, 2007


RICARDO J. PALABRICA
PRIMARY EXAMINER